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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,295	01/16/2002	Karen Swider Lyons	83,068	2321
7590 08/14/2007				
Naval Research Laboratory Code 1008.2 4555 Overlook Ave., S.W. Washington, DC 20375-5320				
			EXAMINER BOS, STEVEN J	
			ART UNIT 1754	PAPER NUMBER
			MAIL DATE 08/14/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/046,295

**Applicant(s)**

LYONS ET AL.

**Examiner**

Steven Bos

**Art Unit**

1754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☐ Claim(s) \_\_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11 and 17-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>6-4-2007</u> . | 6) <input type="checkbox"/> Other: _____  |

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A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 4, 2007 has been entered.

It is noted that support for the amendments was not found at the locations cited on pp. 4,5,7,8 and original claim 8. Clarification is requested.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 11,17-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 11,25, "the lithium capacity" lack(s) proper antecedent basis in the claim(s).

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 11,17,18,23,24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thome '707 in view of either Nishihara '181 or the Chemical Principles reference to show a statement of fact.

Thome suggests the process of heating a metal oxide, eg.  $V_2O_5$ , at  $550^{\circ}C$  for about 8 hours in a flowing gas mixture of air and water vapor and then cooling the metal oxide. See col. 2-5. Thome teaches that air is flowing countercurrently to the formed  $V_2O_5$ . Thome suggests the same process as that instantly claimed therefore defects and increased lithium capacity would also be introduced into  $V_2O_5$  by the taught process. The metal oxide appears to have the instantly claimed surface area. In any event, the size of an article ordinarily is not a matter of invention, In re Rose 105 USPQ 237. See cols. 5,6. Air itself contains water vapor, ie.  $H_2O_{(g)}$  gas. See col. 2, line 23 of Nishihara or the Chemical Principles reference.

The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, In re Malagari, 182 USPQ 549.

Claims 11,24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Howard, Jr. '477 in view of either Nishihara '181 or the Chemical Principles reference to show a statement of fact.

Howard, Jr. suggests the process of heating a metal oxide sample, eg.  $\text{LiMn}_2\text{O}_4$ , in flowing air. See col. 10, examples 1-3. Air contains water vapor or  $\text{H}_2\text{O}$  gas according to Nishihara, col. 2, line 23 and the Chemical Principles reference. The metal oxide sample appears to have the instantly claimed surface area; in any event the size of an article ordinarily is not a matter of invention, *In re Rose*, supra.

The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, *In re Malagari*, 182 USPQ 549.

Claims 11,17,18,19,23,24,25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chambers '005.

Chambers suggests the process of heating a sample of  $\text{V}_2\text{O}_5$  at  $500^\circ\text{C}$  in a stream of air saturated with water vapor, ie. a flowing gas mixture of  $\text{O}_2$  and  $\text{H}_2\text{O}$ . See col. 4 and example 1. The sample appears to have the instantly claimed surface area; in any event the size of an article ordinarily is not a matter of invention, *In re Rose*, supra.

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The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, In re Malagari, 182 USPQ 549.

Claims 11,17,18,20-22,24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shizuka '637 in view of either Nishihara '181 or the Chemical Principles reference to show a statement of fact.

Shizuka suggests the process of heating a metal oxide, eg.  $Mn_2O_3$ ,  $Co_3O_4$ , in air to 500°C for 6 hours at a rate of 5°C/min and then cooling the metal oxide to room temperature, ie. ambient, at a rate of 5°C/min. See examples 1-5,8. The metal oxide appears to have the instantly claimed surface area; in any event the size of an article ordinarily is not a matter of invention, In re Rose, supra. Air contains water vapor, ie.  $H_2O$  gas. See Nishihara, col. 2, line 23 and the Chemical Principles reference.

The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, In re Malagari, 182 USPQ 549.

Applicant's arguments filed June 4, 2007 have been fully considered but they are unpersuasive.

Applicant argues that Thome does not suggest the process of heating a metal oxide in an atmosphere consisting essentially of  $O_2$  and  $H_2O$  gas and notes that the  $O_2/H_2O$  of the present invention is not the same as the examiner's recited "gas mixture of air and water vapor." Also argued is that air is not the  $O_2/H_2O$  atmosphere in the present claim because air is 79% nitrogen and 21% oxygen. Further it is argued that heating the metal oxide at a low  $O_2$  pressure would affect the basic and novel characteristics of the claimed invention.

However MPEP 2111.03 states that absent a clear indication in the specification or claims of what the basic and novel characteristics actually are, "consisting essentially of" will be construed as equivalent to "comprising." Applicant has only made the conclusion that heating the metal oxide at a low  $O_2$  pressure would affect the basic and novel characteristics of the claimed invention and points to the specification for showing the deleterious effects of heating at a low  $O_2$  pressure. However this showing is only with regard to  $V_2O_5$  whereas the instant claims are of much broader scope. Furthermore, " $O_2$  pressure" is not instantly claimed. The instant claims are open to any " $O_2$  pressure."

Applicant argues that Thome produces pure  $V_2O_5$  from precursors not a method of introducing defects in existing  $V_2O_5$ .

However Thome first forms  $V_2O_5$  and then heats in a gas mixture of oxygen and water vapor which is as instantly claimed therefore the instantly claimed defects and increased capacity would also be introduced into  $V_2O_5$  by the taught process.

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Applicant makes similar arguments as above with regard to Howard and Chambers and Shizuka the examiner hereby incorporates the above response to the arguments of Thome.

Applicant's submission of the "Improved lithium capacity of defective  $V_2O_5$  materials" article to support the fact that low  $O_2$  pressures will not achieve the claimed local ionic defects that increase lithium capacity has been considered but is unpersuasive as it is not commensurate in scope with the instant claims which do not require any specific oxygen pressure.

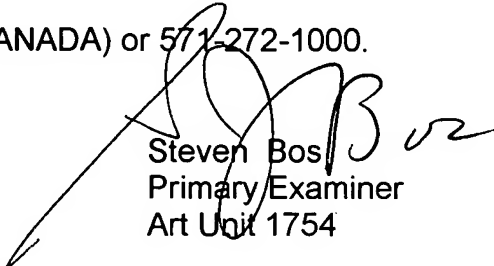
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Bos whose telephone number is 571-272-1350. The examiner can normally be reached on M-F, 9AM to 6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stan Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Steven Bos  
Primary Examiner  
Art Unit 1754

sjb